

## WHAT IS CLAIMED IS:

1. An antenna for a portable communication apparatus, the antenna comprising:

5 a radiator having first and second ends, the first end of the radiator being connected to radio circuitry in the portable communication apparatus; and

a feedback conductor having

10 a first end connected to the second end of the radiator, the feedback conductor extending along the radiator in a first direction from the second end of the radiator towards the first end of the radiator, and

15 a second end extending along the radiator in a second direction from the first end of the radiator towards the second end of the radiator, for tuning the frequency of the antenna.

2. The antenna according to claim 1, wherein the radiator is an elongated helical radiator.

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3. The antenna according to claim 2, wherein the second end of the feedback conductor is wound in at least one turn outside the helical radiator near the first end of the helical radiator.

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4. The antenna according to claim 1, wherein the second end of the feedback conductor is isolated and bent substantially  $180^\circ$ , and at least a portion of the isolated end of the feedback conductor extends inside at least a portion of the helical radiator substantially in parallel with a longitudinal axis of the radiator.

5. The antenna according to claim 1, wherein the second end of the feedback conductor is isolated and bent substantially  $180^\circ$ , and at least a portion of the isolated

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end of the feedback conductor extends outside of at least a portion of the helical radiator substantially in parallel with a longitudinal axis of the radiator.

5        6. The antenna according to claim 4, further comprising a base plate and at least one satellite radiator that is mounted on the base plate.

10       7. The antenna according to claim 6, wherein two satellite radiators are mounted at opposite edges of the base plate and the helical radiator is positioned between the two satellite radiators.

15       8. The antenna according to claim 6, wherein three satellite radiators are mounted at different edges of the base plate and the helical radiator is positioned between the three satellite radiators.

20       9. The antenna according to claim 1, wherein the radiator and the feedback conductor are molded into a dielectric material.

25       10. The antenna according to claim 1, wherein the radiator and the feedback conductor are enclosed in a dielectric radome.

30       11. The antenna according to claim 1, wherein the radiator comprises a printed-pattern meander-shaped conductor.

12. The antenna according to claim 1, wherein the radiator comprises a patch antenna element.

35       13. A multi-layer printed circuit board, comprising:  
an antenna including  
a radiator having first and second ends, the

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first end connected to radio circuitry in the portable communication apparatus; and

a feedback conductor having

a first end connected to the second end of the radiator, the feedback conductor extending along the radiator in a first direction from the second end of the radiator towards the first end of the radiator, and

a second end extending along the radiator in a second direction from the first end of the radiator towards the second end of the radiator, for tuning the frequency of the antenna.

14. A portable communication apparatus comprising:  
an antenna including

a radiator having first and second ends, the first end connected to radio circuitry in the portable communication apparatus; and

a feedback conductor having

a first end connected to the second end of the radiator, the feedback conductor extending along the radiator in a first direction from the second end of the radiator towards the first end of the radiator, and

a second end extending along the radiator in a second direction from the first end of the radiator towards the second end of the radiator, for tuning the frequency of the antenna.

15. The portable communication apparatus according to claim 14, wherein the antenna is formed as a stub antenna mounted on a housing of the portable communication apparatus.

16. The portable communication apparatus according to claim 14, wherein the apparatus is a mobile telephone.

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